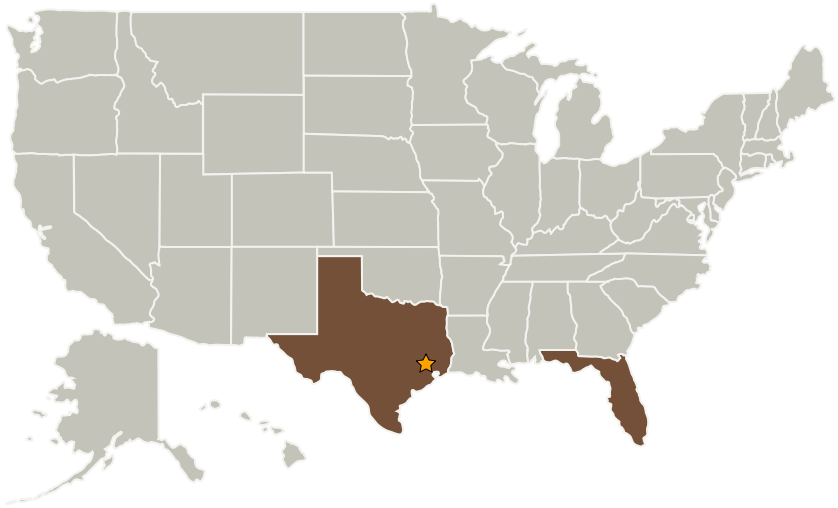
Foveated 3-D Imaging Rangefinder for Object Tracking, Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

Laser rangefinders have numerous NASA and non-NASA applications, including navigation, landing hazard avoidance, automated rendezvous and docking, air and missile defense, infantry and artillery target designating, tank and infantry fighting vehicle fire controlling, surveillance through foliage, cloud-height measurement, and production monitoring in industries as well as commercial and law enforcement, etc. Existing laser rangefinders cannot meet some of the advanced performance requirements including wide field of view (FOV) for situation awareness, high angular resolution for detailed target shape discrimination, and fast response for transit event or moving objects tracking, as well as low weight, volume and power requirements, etc. For NASA's lunar exploration missions, lunar roving vehicle with features of automated path planning, automated driving, and obstacle avoidance are of interest for making planetary surface missions more reliable, safer, and affordable. New Span Opto-Technology Inc. proposes herein a novel laser rangefinder architecture with non-mechanical scanning foveal aperture providing wide FOV 3-D scene profile for situation awareness and high resolution 3-D profile of region of interest for object tracking. System packaging is rugged, compact and light-weight. Phase I research will establish the model, demonstrate the feasibility, and recognize challenging issues of the proposed concept through model analysis and bench top experiments.

Primary U.S. Work Locations and Key Partners



Foveated 3-D Imaging Rangefinder for Object Tracking, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Foveated 3-D Imaging Rangefinder for Object Tracking, Phase I

Completed Technology Project (2008 - 2008)

Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
New Span Opto-Technology, Inc.	Supporting Organization	Industry Minority-Owned Business, Women-Owned Small Business (WOSB)	Miami, Florida

Primary U.S. Work Locations	
Florida	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jame J Yang

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL